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1986
OHIO POTATO CULTIVAR TRIALS

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The 1986 Ohio Potato Cultivar Trials were sponsored jointly by the Ohio Agricultural Research and Development Center, The Ohio State University, The Ohio Cooperative Extension Service, The Ohio Potato Growers Association, and the four cooperating potato operations: Thompson Farms, Mellinger Farms, Logan Farms, and Chase Farms.

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STATEWIDE TRIALS

Introduction

Eight cultivars were planted in each of four farms. These farms were selected in order to give different soil and climate conditions. These cultivars were selected either because they looked promising in previous over-the-state trials or looked promising in the observation trials on two cooperating farms or were selected from the cultivar plots at the Ohio Agricultural Research and Development Center, Wooster. The Katahdin and Norchip cultivars were included as standard varieties.

In addition, the main cultivars were planted at the Campbell Institute for Research and Technology, Napoleon, Ohio, and at the Muck Crops Branch, OARDC, and Willard, Ohio. The data from these locations will be included in this report.

On two of the four farms, 13 other entries were planted in replicated plots to find new selections for the main plots in 1987. Samples from breeders and seed growers, which could not be included in these two observation plots, were planted at the OARDC. This data will be included in the OARDC portion of this report.

Farm Locations

The four farms referred to in the introduction are as follows:

Farm 2 (TH) - Thompson Farms, near Hanoverton, Ohio, Columbiana County -- Main plots plus observation plots.

Farm 3 (Mel) - Mellinger Farms (Crystal Springs Farm), near Leetonia, Ohio, Columbiana County -- Main plots plus observation plots.

Farm 4 (L) - Logan Farms, near Mt. Gilead, Ohio, Morrow County -- Main plots.

Farm 5 (C) - Chase Farms, near Defiance, Ohio, Defiance County -- Main plots. Harvest was delayed due to wet weather.

See Table 2 for summary of cultural practices followed on these cooperating farms -- planting dates, harvest dates, rainfall and related information.

Procedures

The cultivars planted in the main plots in the four farms included: LA01-38, Elba (NY 59), MS 700-70, ND 534-4, Conestoga, WNC 521-12, and the standards - Norchip and Katahdin. The 13 cultivars in the observation plots are shown in Tables 7 and 8.

The plots on each farm were replicated, and data were taken from three replicates of each cultivar. Planting dates ranged from May 3 to May 9. The seed was collected, held in storage at OARDC, transferred prior to planting to Farm No. 2 where the seed was cut,

counted, treated with mancozeb, and bagged for planting at the other sites. Following emergence, stand counts were made. During the growing season, observations were made on diseases, plant vigor, relative maturity, and any other unusual visual conditions.

The plots were harvested with level-bed diggers. A fifty-pound sample was taken from each replicate, graded to U.S. No. 1 standards, and out of this sample 10 tubers were cut for internal defects. A sample of each cultivar was collected at grading for the Pilot Plant, Department of Horticulture, OSU, where chipping and other quality tests were made. See Tables 5 and 8 .

Due to the heavy rains and unfavorable weather in the Defiance area, the only data collected on Farm No. 5 were the gross yields in the field at harvest.

Soil samples were taken on each of the cooperating farms and submitted to the REAL Laboratory, OARDC, for analysis. See Table 1.

Observations

Stands were good with an average 95% on three of the four farms. No stand counts were made on the fourth farm (Farm No.5) due to weather conditions. Conditions were dry in May which may help to explain the excellent stands - probably best stands in the 24 years for these over-the-state plots. In the observation trials in the two farms, the average stand was 93.5%, with lowest being 65% for GG70-11.

Observations were made during the growing season for visual symptoms of the several virus diseases which can be observed by experienced inspectors. Mosaic was most common. In most entries, the mosaic was mild and/or latent mosaic. No visual symptoms of mosaic were found in the LA01-38 or Katahdin. MS 700-70, Norchip, and Elba showed mosaic in the 4 to 7% range. Seedsmen and breeders interested in more detailed information on the amount of the mosaic virus (by visual observation) should write to Mr. Floyd Lower, 373 East Chestnut Street, Lisbon, OH 44432.

Summary

On the basis of the data presented in this report, along with the observations made at harvest and also at time of grading the samples, perhaps the following comments may be helpful.

For a comparison with the various cultivars which have been included in the main (over-the-state) commercial farm trials, see Table 6. The data does not include the information from the two observation plots which were included each year.

Conestoga is a round to slightly oblong tuber with a light buff to slightly netted skin. Enlarged lenticels and growth cracks could be a problem on poorly drained soils. It is a promising cultivar for early, fresh market. Excellent cooking quality has been reported.

ND 534-4 is a promising russet-type potato under Ohio conditions. In the plots in 1986, the tubers were quite uniform with a trace of second growth. The tubers have attractive, medium to moderate russet skin, and shallow eyes. May need irrigation and higher fertilizer rates.

Norchip was included as a standard variety. This cultivar was surprisingly attractive, which may be due to the excellent growing conditions. Growth cracks and second growth occurred in several plots.

LA01-38 continued to be among the most promising cultivars in the Ohio plots in 1986. The tubers are round to slightly oblong, medium buff skin, with a slight tendency for second growth. The cultivar has yielding ability and probably needs more testing under different soil/climatic conditions. Seed will not be available in 1987. Results in other states in this region indicate this cultivar has possibilities for fresh market and chipping.

MS 700-70 is one of the introductions from Michigan State University which has looked promising in earlier Ohio tests. It is a white skinned, round to slightly oblong tuber, with a slight tendency for growth cracks. In these plots, there was a wide range in tuber size. Preliminary reports indicate it may offer some possibilities for the chip industry.

WNC 521-12 will be dropped from the Ohio trials due to hollow heart problems, scab susceptibility, and possible metribuzin injury.

Elba (NY 59) has been a high-yielding cultivar in the Ohio trials, but due to the possible internal discoloration problem, this cultivar is not being suggested for mineral soils in Ohio. It is promising on organic soils. The tubers are round, with a slightly netted skin. The apical (bud) end tends to be deep under some growing conditions. The tubers are quite uniform with shallow eyes. The maturity is late.

Katahdin was included in these plots as a standard.

Table 1. Soil Analyses - 1986: Statewide Trials
Four Cooperating Farms*

	2 (TH)	3 (Mel)	4 (L)	5 (C)
pH	5.3	6.1	6.7	6.6
P (lbs/A)	550	550	74	506
K (lbs/A)	414	307	291	498
Ca (lbs/A)	1390	2470	4680	3960
Mg (lbs/A)	317	326	684	344
CEC (MEQ)	14	12	16	13
Ca % B.S.	25	54	73	75
Mg % B.S.	10	12	18	11
K % B.S.	3.9	3.4	2.3	4.8
Zn (lbs/A)	14.0	11.7	19.3	38.6
B (lbs/A)	.6	1.0	1.6	1.9
Mn (lbs/A)	71	88	32	49
O.M. (%)	1.7	2.1	4.0	2.8

* For code on farm indentification, see text.
Soil analyses performed by REAL Laboratory, Ohio Agricultural Research and Development Center, Wooster, OH

Table 2. Summary of Average Plant Stand, Yield of U.S. No. 1 tubers, and Percent Culls and B-Size Tubers - 1986
Average of Three Statewide Farms

Cultivar	Average Standard	CWT/A U.S. No. 1	U.S. No. 1	Percent "B"	Percent Culls
LA01-38	93	413	95	2	3
Elba	94	393	94	3	3
MS700-70	97	378	92	3	5
Katahdin	97	363	92	4	4
WNC 521-12	90	344	91	2	8
Conestoga	94	321	89	4	7
ND 534-4	96	302	85	8	7
Norchip	97	301	84	6	10
Average	95	347	90	4	6

The relative material for these eight cultivars in 1986 follow:
Early - 115 to 121 days - Conestoga
Medium Early - 122 to 129 days - ND 534-4, LA01-38
Mid-Season - 130 to 135 days - Norchip, Katahdin
Late - 136 to 139 days - MS700-70, WNC 521-12
Very Late - 140 or more days - Elba

Table 3. Cultural and Pest Control Practices Used on Four Ohio Farms Main Trials

	2 (TH)	3 (Mel)	4 (L)	5 (C)
Gross Yield (cwt/A)	329	413	209	563
Date Planted	May 3	May 6	May 8	May 9
Date Killed	Sept 8	Sept 10	Sept 4	Sept 10
Date Harvested	Oct 7*	Oct 2	Oct 9	Nov 12*
1985 Crop	Wheat	Wheat	Corn	Soybeans
Cover Crop	Clover & Timothy	Stubble	None	None
Fertilizer	30 lbs N 900 lbs 12-15-25	1100 lbs 10-20-20	140 lbs N 160 lbs P 160 lbs K 30 lbs S	Complete Broadcast Liquid in row 112 gl 5-15-15
Herbicide				
Incorporated	Eptan	-	-	-
Pre-emergence	Lorox & Dual	Dual & Sencor	Dual & Lorox	-
Systemic Insecticide	Thimet	Thimet	Temik	Furadan
Spacing (inches)	9x36	10x34	10x36	10x34
Soil type	Silt loam	Chili Silt loam	Heavy Silt loam	Bilmore loam
Soil condition	Good but slightly dry	Good but slightly dry	Good	Good but Slightly wet
Rainfall (inches)** (plant - vine kill)	17.7	11.7	18.23	24.0
Rainfall (inches) (Jun-Jul-Aug)	13.4	9.5	14.69	19.35

* Harvest delayed due to rain
** Includes one inch by irrigation

Table 4. Statewide Trials: Gross Yield, U.S. No. 1 Yield, Percent U.S. No. 1 - Four Farms, Ohio 1986 (CWT/A)

	Farm 2 (TH)			Farm 3 (Mel)			Farm 4 (L)			Farm 5 (C)*		
Cultivar	Gross Yield	U.S. No. 1	% U.S. No. 1	Gross Yield	U.S. No. 1	% U.S. No. 1	Gross Yield	U.S. No.1	% U.S. No. 1	Gross Yield	Average** U.S. No.1 Yield	% U.S. No. 1
Conestoga	312	268	86	387	346	90	273	248	91	482	321	89
ND 534-4	319	254	80	431	384	89	311	268	86	627	302	85
LA 01-38	382	351	92	462	439	95	456	448	98	586	413	95
MS 700-70	338	296	87	449	421	94	448	418	93	533	378	92
Norchip	324	253	78	384	329	86	355	322	91	494	301	85
Katahdin	309	274	89	402	361	90	468	455	97	657	363	92
WNC 521-12	296	256	89	382	348	89	455	427	94	485	344	91
Elba	351	331	94	394	368	93	510	478	94	646	393	94
Average	329	285	88.5	413	374	91	410	383	93	563	347	90

*U.S. No. 1 yield are not available on this farm, due to weather conditions at harvest. Field weight is shown.
**U.S. No. 1 yield (CWT/A) three farm - Farm 2 (TH), Farm 3 (Mel), and Farm 4 (L)

Table 5. Summary of Chipping Quality - Three Farms - 1986

	Farm #2 (TH)				Farm #3 (MEL)				Farm #4 (L)			
Cultivar	Spec Gravity	PC/SFA Color	% Blister	Agtron E5 - F	Spec Gravity	PC/SFA Color	% Blister	Agtron E5 -F	Spec Gravity	PC/SFA Color	% Blister	Agtron E5 - F
Conestoga	1.073	1	0	54.3	1.075	1	0	59.2	1.074	2	0	50.9
ND 534-4	1.071	1	40	54.7	1.072	3	50	53.7	1.078	1	20	48.6
Norchip	1.070	2	20	49.0	1.077	1	0	53.3	1.082	2	40	55.2
LA01-38	1.085	1	30	50.0	1.092	2	30	57.8	1.088	1	10	48.9
Katahdin	1.072	2	10	51.3	1.073	1	30	51.0	1.068	3	0	43.3
MS 700-70	1.093	1	10	49.8	1.097	1	0	50.2	1.092	1	0	56.9
WNC 521-12	1.106	2	30	62.0	1.107	1	20	48.1	1.107	1	20	45.9
Elba (NY 59)	1.083	3	20	44.2	1.082	1	30	57.5	1.083	4	20	26.0

See text for farm symbols
Specific gravity and chipping tests made after harvest and prior to storage.
PC/SFA refers to fry color standards as established by the Potato Chip/Snack Food Association: 1.0 - lightest colored chip; 5.0 darkest color chip.

Table 6. Summary of Yields (U.S. No. 1) of Major Entries in Ohio Over-the-State Trials, 1977-1986

Cultivar	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Jemseg					207	294	163			
Superior	248	256								
Conestoga							141	230	266	321
Crystal	256	348	425	273	254					
Atlantic	374	309	414							
Langlade (W-718	360	299	386	296	311	388				
Norchip	262	262	309	201	231	337	184	208	228	301
LA01-38									359	413
Katahdin	320	255	346	267	292	374	238	315	335	363
Denali				316	269	300	206			
Elba (NY 59)					324	373	245			393
NEB. A129.69-1				320	336	341	207	278		
WNC 521-12									325	344

The cultivars are listed in approximate order of maturity from very early (Jemseg) to very late (WNC 521-12). The Katahdin and Norchip are included as standards. This table summarizes the major cultivars which were included in the statewide trials on commercial farms, usually four to six farms. Some widely planted varieties such as Shurchip, Monona, Red La Soda, and others may have been included in these statewide trials prior to 1977.

Table 7. Observation Trials - Two Farms - 1986
Yield (CWT/A) of U.S. No. 1 Tubers and Percent U.S. No. 1

	Farm 2 (TH)		Farm 3 (Mel)		Average	
Cultivar	U.S. No. 1 Cwt/A	% U.S. No. 1	U.S. No. 1 Cwt/A	% U.S. No. 1	U.S. No. 1 Cwt/A	% U.S. No. 1
Atlantic	341	91	314	87	355	89
BRS991 WV16	339	90	369	93	354	92
Yukon Gold	273	90	363	92	318	91
Krantz	281	90	347	88	314	89
Wischip 19	284	92	342	94	313	93
Wischip 16	246	87	352	95	299	91
Campbell 14	261	88	322	91	292	90
Sunrise	240	94	322	91	281	93
Superior	236	86	321	87	279	87
ND860-2	238	85	294	88	266	87
6670-11	260	90	262	89	261	87
Norking R	215	83	302	88	259	86
Agassiz	178	80	286	89	232	85
average	261	88	322	90	292	88
Katahden*	274	89	361	90	318	90
Norchip*	253	78	329	86	291	82

*Data from adjoining plots

Table 8. Observation Trials - Two Farms
Yield, Specific Gravity and Chipping data, 1986 (Yields - CWT/A)

	FARM 2 (TH)					FARM 3 (Mel)				
Cultivar	Yield U.S. No. 1	Specific Gravity	PC/SFA Color	% Blisters	Agtron E5-F	Yield U.S. No. 1	Specific Gravity	PC/SFA Color	% Blister	Agtron E5-F
Atlantic	341	1.093	1	40	57.5	314	1.074	1	10	51.6
BR5991 WV16	339	1.087	1	20	54.2	369	1.096	2	20	49.4
Wischip 19	284	1.085	1	10	58.2	342	1.086	2	0	61.4
Krantz	281	1.072	1	20	58.2	347	1.100	2	30	52.2
Yukon Gold	273	1.078	3	10	52.8	363	1.079	2	10	50.7
Campbell 14	261	1.082	2	50	58.5	322	1.090	2	50	50.7
6670-11	260	1.097	2	20	56.4	262	1.099	1	0	48.0
Wischip 16	246	1.080	1	50	59.4	352	1.079	2	10	58.0
Sunrise	240	1.075	1	30	52.0	322	1.083	2	0	55.5
ND860-2	238	1.076	1	20	56.6	194	1.082	1	30	57.5
Superior	236	1.068	3	10	37.8	321	1.075	1	0	52.8
Norking R	215	1.084	1	40	44.4	302	1.079	1	10	52.1
Agassiz	178	-	-	-	-	286	1.074	1	30	52.0

Table 9. Yield, Grade, and Tuber Defects (percent hollow heart, internal discoloration, and vascular discoloration) for Observation Trial Entries, Wooster, OH - 1986.

Cultivar	CWT/A Gross	CWT/A US No 1	% US No 1	Tuber Defects Hollow Heart	% Int. Disc.	Vasc. Disc.
MS 702-91	295	254	86	0	17	3
MS 700-70	263	231	88	0	30	0
MS 716-15	345	296	86	0	0	0
MS 702-80	304	255	84	0	0	0
WNC 672-2	271	249	92	0	20	0
AC 77513-1 Russ	142	117	82	0	0	0
WNC 567-1 Russ	162	118	73	0	3	0
A 76147-2	428	386	90	0	0	0
AC 77652-1	155	131	85	0	0	0
Krantz	53	52	98	0	0	0
MN 11816	160	138	86	0	0	0
BN 9820-3	145	121	83	0	0	0
CF 7688-9	346	311	90	0	0	0
AF 522-1	191	174	91	0	0	10
NY 64	385	323	84	0	0	10
AF 522-5	264	233	88	0	10	0
BC 9668-1	198	156	79	0	0	0
AC 79100-1	213	166	78	0	0	0
AC 79128-1	254	166	65	0	0	0
A 72685-2	274	257	94	0	0	0
CD 7916-3	126	115	91	0	0	0
MS 700-79	167	150	90	20	0	0
B 6949-WV3	165	125	76	0	10	0
W 752	312	281	90	0	0	0
WNC 285-18	119	95	80	0	0	0
MN 12331	254	216	85	0	0	0
MN 11705	274	242	88	0	0	0
MN 10874	254	227	89	0	30	0
B 9792-8B	363	322	89	0	0	0

Table 9. (continued) Yield, Grade, and Tuber Defects (percent hollow heart, internal discoloration, and vascular discoloration) for Observation Trial Entries, Wooster, OH - 1986.

Cultivar	CWT/A Gross	CWT/A US No 1	% US No 1	Tuber Defects Hollow Heart	% Int. Disc.	Vasc. Disc.
CF 7523-1	395	313	79	0	0	0
BN 9803-1	230	184	80	10	0	0
BN 9855-2	334	273	82	0	0	0
ND 534-4	295	254	86	0	0	0
A 7411-2	232	170	73	0	0	0
CF 7679-15	293	247	84	0	0	0
MN 12465	264	243	92	0	0	0
AF 236-1	324	272	84	0	0	0
BR 5662-WV13	167	152	91	0	0	0
WNC 672-2	332	311	94	0	0	0
TC 582-1	104	89	86	0	0	0
AC 77652-1	249	186	75	10	0	0
NY 72	271	246	91	0	0	0
NY 71	276	226	82	0	0	0
W 779 Rus	407	327	80	0	0	0
Caribe	465	427	92	0	0	0
WIS 903	264	224	85	0	0	0
WIS 79-5	293	217	74	0	0	0
WIS 855	327	300	92	0	0	0
WIS 848	324	299	92	0	0	0
ND 1538-1 RUS	249	199	80	0	0	0
ND 1215-1	365	323	88	0	0	0
ND 698-1	208	178	86	0	0	0
ND 671-4 Rus	211	182	86	0	0	0
ND 651-9	315	250	79	0	0	0
ND 1113-10 Rus	346	297	86	0	0	0
Tolass (MN 7973)	312	274	88	0	0	0
NY 81	327	289	88	0	10	0
Kennebec	327	249	76	0	0	0

Table 10. Specific Gravity, Solids, and Chipping Characteristics for Observation Trial Entries, Wooster, OH - 1986

Cultivar	Specific Gravity Water	Average Total Solids %	Chip Color PC/SFA	% Blister	Agtron ES-F	Agtron M-30A
MS 702-91	1.084	21.06	3	40	58.0	46
MS 700-70	1.088	21.90	2	20	59.9	45
MS 716-15	1.095	23.38	3	10	52.9	45
MS 702-80	1.081	20.43	2	0	58.2	44
WNC 672-2	1.088	21.90	2	10	55.4	47
AC 77513-1 Russ WNC 567-1 Russ A 76147-2	1.089	22.11	3	40	50.3	36
AC 77652-1 Krantz	1.075	19.16	-	-	-	-
MN 11816 BN 9820-3 CF 7688-9	1.096	17.01	2	10	55.2	42
AF 522-1	1.083	20.85	2	10	52.4	41
NY 64	1.095	23.38	3	20	51.1	40
AF 522-5 BC 9668-1 AC 79100-1 AC 79128-1 A 72685-2	1.098	24.01	2	60	58.2	47
CD 7916-3 MS 700-79 B 6949-WV3 W 752 WNC 285-18	1.103	25.07	2	20	57.9	42
MN 12331 MN 11705	1.079	20.00	-	-	-	-
MN 10874	1.084	21.06	3	40	44.4	31
B 9792-8B	1.099	24.22	3	30	51.9	30

Table 10. (continued) Specific Gravity, Solids, and Chipping Characteristics for Observation Trial Entries, Wooster, OH - 1986

Cultivar	Specific Gravity Water	Average Total Solids %	Chip Color PC/SFA	% Blister	Agtron ES-F	Agtron M-30A
CF 7523-1	1.087	21.69	2	30	56.2	31
BN 9803-1						
BN 9855-2	1.107	25.91	2	10	54.7	37
ND 534-4						
A 7411-2						
CF 7679-15	1.093	22.96	3	20	51.7	39
MN 12465	1.083	20.85	2	30	59.9	38
AF 236-1	1.075	19.16	-	-	-	-
BR 5662-WV13						
WNC 672-2	1.090	22.33	1	10	58.2	42
TC 582-1						
AC 77652-1						
NY 72	1.087	21.69	2	50	66.7	45
NY 71	1.081	20.43	2	50	56.9	44
W 779 Rus	1.093	22.96	2	50	51.3	41
Caribe	1.075	19.16	-	-	-	-
WIS 903	1.085	21.27	1	0	62.0	52
WIS 79-5						
WIS 855	1.095	23.38	2	40	64.3	44
WIS 848	1.086	21.48	2	30	56.0	37
ND 1538-1 RUS						
ND 1215-1	1.078	19.79	-	-	-	-
ND 698-1	1.084	21.06	2	20	59.6	44
ND 671-4 Rus						
ND 651-9	1.079	20.00	-	-	-	-
ND 1113-10 Rus						
Tolass (MN 7973)	1.077	19.58	-	-	-	-
NY 81	1.089	22.11	1	60	60.5	44
Kennebec						

POTATO VARIETY TRIAL AND FERTILITY STUDY 1986

Richard L. Hassell

Muck Crops Branch O.S.U.

All potato work conducted at the Muck Crops Branch was in cooperation with the Ohio Potato Growers Association and the Ohio State University.

The cultivar test was conducted alongside the irrigated portion of the russet fertility study; therefore,it received moisture on a weekly basis. Yields were down from previous years' studies, which was hard to explain because of the excellent growing season. Cultivar LA01-38 continues to have excellent overall yields with good quality potatoes; however, once they are removed from the soil, they start to spoil. This decay problem has not been identified.

The russet fertility study shows interesting results. These potatoes were spaced at twelve inches between seed pieces, which seems to be too wide of spacing. If the potatoes were irrigated, an excessive number of large tubers were present. Also, an increase in cull number followed the same trend. The effect of nitrogen is still questionable.

POTATO VARIETY TRIAL 1986

MUCK CROPS BRANCH

O.A.R.D.C. - O.S.U.

Variety	Marketable CWT/acre	Large Tubers CWT/acre	Culls CWT/acre	(B) Size CWT/acre	PC/SFA 1=light 5=dark	Blisters %	Specific Gravity
Superior	296	18	75	25	4	20	1.076
Katahdin	295	60	61	10	3	30	1.072
LA01-38	262	92	60	10	3	10	1.077
Sunrise	252	23	28	18	1	50	1.071
NY 81	240	29	32	15	3	60	1.074
Monona	274	45	135	14	1	30	1.073
Atlantic	227	9	45	19	2	40	1.081
Norchip	218	1	55	18	2	40	1.075
ND 860-2	224	29	72	27	2	40	1.078
NY 59	239	52	24	9	5	40	1.072
Cambell	219	24	51	15	2	30	1.071
G-670-11	191	35	79	9	4	20	<1.068
Krantz	164	30	70	12	2	30	1.072
NY 64	161	34	91	22	4	20	1.071
BR 5991-WV16	157	39	65	14	2	20	1.069
ND 534-4	161	38	50	24	3	60	<1.068
ND 388-1	165	25	61	22	3	50	1.072
MS 700-70	153	19	0	11	1	10	1.082
Conestoga	118	11	69	14	3	20	1.071
WNC 521-12	104	43	47	8	4	10	1.086
WF 31-4	110	29	50	14	2	60	1.078
NY 79	60	0	69	18	2	10	<1.068

Seeded - May 21, 1986

Harvested - Sept. 26, 1986

Plot Size - 2 row, 32" apart, 28 ft. long

3 replications/variety

RUSSET POTATO FERTILITY STUDY 1986

MUCK CROPS BRANCH

O.A.R.D.C. - O.S.U.

Variety	Fertilizer Practices	Marketable CWT/acre	Large Tubers CWT/acre	Culls CWT/acre	(B) size CWT/acre	RC/SFA 1=light 5=dark	Blister %	Specific Gravity
Belrus 12	1	113	16	57	31	4	30	1.072
	2	134	14	38	31	4	40	1.069
(non-irrigated)	3	104	16	58	45	3	90	1.075
	4	115	14	57	31	3	70	1.073
Belrus 12	1	118	39	75	29	3	60	1.069
	2	97	36	65	35	4	50	1.069
(irrigated)	3	100	43	66	37	3	40	1.074
	4	89	45	106	27	4	20	1.074
Belrus 4	1	114	23	36	21	3	50	1.075
	2	109	46	46	23	3	50	1.072
(non-irrigated)	3	120	37	37	22	3	70	1.075
	4	114	9	40	26	3	30	1.075
Belrus 4	1	123	45	68	32	-	-	<1.068
	2	95	30	58	26	4	30	1.077
(irrigated)	3	102	26	59	29	4	50	1.069
	4	88	35	61	24	4	20	1.069
N D 534-4	1	164	35	85	38	-	-	<1.068
	2	161	36	76	34	-	-	<1.068
(non-irrigated)	3	156	34	73	36	-	-	<1.068
	4	190	33	82	37	-	-	<1.068
N D 534-4	1	184	82	78	36	-	-	<1.068
	2	123	66	102	38	-	-	<1.068
(irrigated)	3	129	49	105	36	-	-	<1.068
	4	136	54	98	30	-	-	<1.068

1 = NO sidedress, nitrogen, fertilizer
2 = 30lb nitrogen at 5" plant height
20lb nitrogen at flowering
3 = 40lb nitrogen at 5" plant height
20lb nitrogen at flowering
4 = 40lb nitrogen at 5" plant height
40lb nitrogen at flowering

Seeded = May 21, 1986
Harvested = Sept. 22, 1986

Broadcast 1,000 lb (17-17-17) broadcast and disked in prior to planting.

TABLE 1. Potato Variety Trial Results, Campbell Institute Of Research and Technology Napoleon, Ohio, 1986.

Variety	Total Yield (cwt)	Marketable >1 7/8" (cwt)	% Marketable	Hollow Heart %	Internal Browning[1] %	Sp Gr	PC/SFA Color	% Blister	Agtron E-5F	Agtron M-30A
LA01-38	312.5	285.0	91.1	0	0	1.073	2	0	47.5	43
MS 716-15	296.4	271.0	91.3	0	0	1.074	2	0	54.1	44
NY 59	291.5	263.9	90.5	2.5	15.0	1.078	4	0	28.4	16
MS 700-70	282.2	258.5	91.8	0	0	1.08	3	40	52.1	38
MS 702-80	281.0	253.2	90.1	2.5	0	1.071	2	0	51.9	43
MS 700-83	277.2	251.7	90.7	0	5.0	1.071	2	10	51.3	39
Sunrise	272.2	249.7	91.9	0	0	1.065	2	20	52.7	42
WNC 521-12	266.4	240.3	90.2	5.0	0	1.094	2	10	53.2	38
Conestoga	250.3	228.2	91.2	0	0	1.064	2	30	42.5	40
MS 702-91	221.2	208.9	94.2	0	17.5	1.069	2	20	59	59
ND 534-4	202.2	112.7	55.2	0	2.5	1.067	4	20	30.2	21
Mean	268.5	238.5	88.0	0.91	3.6					
Bayes LSD .05	67.2	54.5	6.2							
C.V.	14.8	38.1	5.4	305.8	198.8					

[1]Data are based on samples of 10 tubers per entry, 4 replications

PROCEDURE:

Planted MAY 8. Harvested September 10.
Randomized Complete Block Design with 4 replications.
Plot size - 1 row, 20 feet long.
Row spacing - 34 inches
Plant spacing - 10 inches
Soil type - loamy sand
Fertilizer - 50-100-200 broadcast
30-130-130 banded at planting
Fungicide - Dithane M-45
Insecticide - Furadan at planting, Sevin for Colorado Potato Beetle
Herbicide - Dual + Sencor, preemergence

NORTH CENTRAL REGIONAL TRIAL

Introduction

The North Central Regional Potato Variety Trial (NCR) has been conducted for 36 years. Fourteen states and two Canadian provinces (Alberta and Manitoba) are cooperating in this coordinated trial. Participating plant breeders give tubers of their most promising potato selections to cooperators who, in turn, evaluate these entries in their respective states or provinces. The states go as far south as Louisiana and as far north as Minnesota, North Dakota, and the Canadian provinces mentioned above.

Nearly 40 varieties have been named and released after testing in this well-established program. Dr. Robert H. Johannsen, potato breeder in the Department of Horticulture, North Dakota State University, is the program coordinator. Ohio has been one of the cooperating states for many years.

Procedure

Twenty-one varieties and selections were evaluated in the NCR plot at the Ohio Agricultural Research and Development Center, Wooster, Ohio. These 21 varieties included Norland, Red Pontiac, Norchip, Russet Burbank, and Norgold Russet as standard varieties.

Plots were single rows, 30 feet long, and were replicated three times in a randomized complete block design. The plot was planted May 7 and the vines were killed (with Diaquat and spreader) September 3.

The fertilizer program consisted of 1200 pounds of 10-20-20, one-half applied as a plow-down application and the remainder applied in bands at planting time. Dual/Lexone combination was applied immediately after planting. Fungicides and insecticides were applied during the growing season as suggested in the pesticide guides from the Ohio Cooperative Extension Service.

Plots were harvested September 17 and tubers were picked by hand and weighed for gross yield per plot. A representative sample - approximately 50 pounds - was taken from each replicate to be graded for U.S. No. 1, Bees, and culls. At grading time, tubers were also evaluated for internal and external defects. At harvest, a 20 pound sample was collected for specific gravity and other chipping characteristics. A maturity rating was made August 25.

TABLE NC 1. Maturity rating, scab area - type, gross yield, U.S. #1 yield, percent U.S. #1, chip data, general merit rating and general notes. North Central Regional Trial, Ohio Agricultural Research and Development Center, Wooster, Ohio, 1986.

Selection Number or Variety	Aver.[1] Mat.	Most[2] Representative Scab Area-Type	CWT/A Aver. Yield	CWT/A Aver. Yield US #1	Aver. Percent US #1	(Net Solids/a) Aver. Total Solids	Gen.[3] Merit Rating	Chip[4] Color	Early[5] Blight Reading	Comments and General Notes
EARLY										
Norland	1	0	248	230	93	17.68		-		
ND651-9	3	0	307	246	80	19.37		2		Small tubers
ND860-2	2	0	303	268	88	22.75		2		Uniform tubers
W832	3	1-4	273	229	84	22.54		2		Some sprouting; scab
MEDIUM TO LATE										
MS700-83	2	0	332	263	79	22.75		3	-	
MS704-10	3	0	261	214	82	21.69				
MN12161	3	0	253	201	79	22.11		3		Sprouting
MN12567	3	0	236	187	79	20.43		2		Promising
MN82328	3	0	198	174	88	20.85		2		Pink skin but promising
NE165.75-2	4	0	173	142	82	18.95		3		Rough shape
NEA71.72-1	3	0	191	155	81	20.64		3		Shape maybe a problem
BN9803-1	4	0	307	265	86	23.59		3		
ND671-4Russ	3	0	239	189	79	19.37		3		Promising russet for OH?
NDT9-1068-11R	2	0	361	281	78	17.89		3		Attractive red skin color
W879	2	0	291	225	77	25.07		1		Shape maybe a problem
W948R	3	0	229	203	89	21.27		3		Good color and uniformity
Red Pontiac	3	0	351	295	84	18.53		3		
Russet Burbank	5	0	251	168	67	21.90		2		Poor shape
Norgold Russet	3	0	301	266	88	20.21		4		Poor shape
Norchip	3	0	332	256	77	21.27		2		
La12-59			-	-		-		-		

1/ 1-Very Early-Norland maturity; 2-Early-Irish Cobbler maturity; 3-Medium-Red Pontiac maturity; 4-Late-Katahdin maturity; 5-Very Late-Kennebec or Russet Burbank maturity.

2/ AREA - T-less than 1%; 1 - 1020%; 2 - 21-40%; 3 - 41-60%; 4 - 61-80; 5 - 81-100%. TYPE - 1. Small, superficial; 2. Larger, superficial; 3. Larger, rough pustules; 4. Larger pustules, shallow holes; 5. Very large pustules, deep holes

3/ Place top five among all entries including check varieties; disregard maturity classification. (Rate first, second, third, fourth and fifth (in order) for overall worth as a variety).

4/ Chip Color - PCII Color Chart or Agtron.

5/ Early Blight - 1-suspectible; 5-highly resistant.

TABLE NC 2. Potato external defects and internal (hollow heart, internal necrosis, vascular discoloration) defects. North Central Regional Trial, Ohio Agricultural Research and Development Center, Wooster, Ohio, 1986

Selection Number or Variety	Scab (3)	Growth Cracks	Second Growth	Sun Green	Total (4) Tubers Free of External Defects	Hollow Heart	Internal Necrosis	Vascular Discoloration	Normal Tubers (5)
EARLY									
Norland	0	2	0	0	98	0	0	0	100
ND651-9	0	4	8	16	72	0	0	0	100
ND860-2	0	0	4	4	92	0	3	0	97
W832	2	0	3	10	85	0	7	0	93
MEDIUM TO LATE									
MS700-83	0	4	1	9	86	0	0	0	100
MS704-10	0	3	0	10	87	0	0	0	100
MN12161	0	3	9	7	81	0	0	0	100
MN12567	0	1	4	5	90	0	0	0	100
MN82328	0	2	1	2	95	0	0	0	100
NE165.75-2	0	0	0	1	99	0	0	3	97
NEA71.72-1	0	0	18	3	79	3	0	0	97
BN9803-1	0	2	4	4	90	0	3	3	94
ND671-4Russ	0	3	9	3	85	0	0	0	100
NDT9-1068-11R	0	4	3	4	89	0	3	3	94
W879	0	2	4	9	85	0	0	0	100
W948R	0	1	3	0	96	0	0	0	100
Red Pontiac	0	0	6	3	91	0	7	0	93
Russet Burbank	0	2	11	1	86	0	0	0	100
Norgold Russet	0	0	7	2	91	0	0	0	100
Norchip	0	0	12	15	73	0	0	0	100
La12-59	-	-	-	-	-	-	-	-	-

(1) Based on four 25 tuber samples (one from each replication). Percentage based on number of tubers.

(2) Based on four 25 tuber samples (one from each replication). Percentage based on number of tubers.

(3) Includes all tubers with scab lesions whether merely surface, pitted or otherwise and regardless of area. Be sure to count tubers with any amount of scab in this category.

(4) This total - tubers free from any external defect of any sort.

(5) Percentage normal tubers are those showing no internal defects. Some individual tubers will have more than one type of internal defects.

NORTHEASTERN REGIONAL TRIAL

Introduction

Fourteen potato varieties and clones were tested at the Ohio Agricultural Research and Development Center, Wooster, Ohio during the 1986 growing season. This test was conducted as part of the NE107 Regional Project (Breeding and Evaluation of Potato Clones for the Northeast).

Methods

Single row plots, 30 feet long were planted on May 7 using a randomized complete block design and three replications. Fertilization consisted of 1200 lbs/A 10-20-20, one-half applied as a plow-down application and the remainder banded at planting. Cultural practices were similar to those used on commercial farms in the area. Vines were killed at 112 days with Diquat + spreader. Specific gravity was determined using the potato hydrometer method. Chip color was evaluated by using the subjective standards established by the Potato Chip/Snack Food Association. Objective color determinations were made with the Agtron E - 5F and Agtron M - 30A. Hollow heart and internal necrosis ratings indicate the number of affected tubers found per 30 large tubers examined.

Results

Weather conditions during 1986 were near the long term averages for this location, except that June was unusually wet and August unusually dry. Within the tests, only four clones exhibited marketable yield potential equal to Superior (Ohio Table 1). These clones were NY 81, F 74123, NY 79, and NY 64.

Among the four clones with high marketable yield was one selection, NY 79, which was found to have hollow heart (Ohio Table 2). NY 79 also had the greatest percent tuber defects, due primarily to a large number of tubers with growth cracks. Of the top yielding clones, internal necrosis was detected in F 74123. Plant stand was greater than 80% for two of the top four clones -- F 74123 and NY 79 (Ohio Table 3).

Ohio Table 1. Yield, marketable yield, percentage of yield by grade size distribution and specific gravity for varieties grown at Wooster, Ohio - 1986.

Variety	Total Yield cwt/A	Marketable Yield cwt/A	Marketable Yield percentage of std.	Size Distribution by Class (% of total yield) U.S. No. 1 (over 1-7/8")	B size	Culls	Spec. Gravity
AF 236-1	238	230	74	96	1	3	1.082
B 9140-32	262	254	82	97	2	1	1.090
CF 7679-15	255	244	79	95	1	4	1.087
F 70021	302	283	92	94	1	5	1.071
F 74123	394	375	121	95	1	4	1.080
Hampton	294	283	91	96	1	3	1.078
Katahdin	278	259	84	93	1	6	1.085
Nemarus	271	263	85	97	1	2	1.091
Norchip	344	334	108	97	1	2	1.087
NY 64	340	323	104	95	2	3	1.088
NY 79	381	364	117	96	1	4	1.079
NY 81	402	389	125	97	1	2	1.089
Sunrise	337	319	103	94	2	4	1.083
Superior (std)	323	310	100	96	1	3	1.085
Waller Duncan LSD (K=100)	59	59					

Ohio Table 2. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, internal necrosis ratings, and chip color for varieties grown at Wooster, Ohio - 1986.

Variety	Plant Data		Tuber Data		Tuber Defects %				Hollow Heart Rating	Internal Necrosis	Chip Color[2]
	Size	Matur.at Vinekill[1]	Shape	Appear-ance	Total	Sun burn	Mis-shapen	Growth Cracks			
AF 236-1	5	10	6	7	1.3	1.3	0	0	0	1	2
B 9140-32	7	30	3	5	0.3	0.3	0	0	0	1	2
CF 7679-15	8	7	3	5	4.9	0.9	1.5	2.5	3	2	3
F 70021	7	20	2	6	1.7	1.7	0	0	0	0	3
F 74123	7	27	5	4	3.7	1.1	2.6	0	0	3	3
Hampton	8	13	2	5	0.5	0.5	0	0	1	5	3
Katahdin	9	10	3	5	4.7	2.9	0	1.8	0	1	3
Nemarus	7	22	8	8	1.9	0	1.4	0.5	1	0	2
Norchip	7	17	4	5	4.9	2.6	2.0	0.3	0	3	2
NY 64	8	23	5	6	4.3	2.2	0.5	1.6	0	0	3
NY 79	7	43	3	5	7.0	1.1	1.6	4.3	3	0	2
NY 81	9	27	3	5	0	0	0	0	0	0	2
Sunrise	-	48	3	5	3.3	3.3	0	0	0	0	2
Superior	5	25	3	5	1.4	0.3	1.1	0	0	0	2

[1]Percent dead on August 20 (13 days prior to vinekill)

[2]PC/SFA

Ohio Table 3. Plant stand, type and appearance, percent blister, and Agtron readings for varieties grown at Wooster, Ohio - 1986.

Variety	Plant Data			% Blister[1]	Agtron E - 5F	Agtron M - 30A
	Stand (%)	Type	Appearance			
AF 236-1	76	5	6	60	59.3	42
B 9140-32	70	6	8	40	54.9	37
CF 7679-15	66	6	8	0	48.2	37
F 70021	76	6	7	0	49.2	35
F 74123	84	6	8	50	58.1	39
Hampton	70	9	8	40	49.1	31
Katahdin	86	9	9	0	50.7	29
Nemarus	76	8	8	30	54.8	37
Norchip	67	6	8	60	60.8	45
NY 64	54	9	9	10	54.7	35
NY 79	84	6	8	10	58.3	38
NY 81	43	9	9	40	52.1	41
Sunrise	68	-	-	30	52.7	36
Superior	91	5	6	10	57.5	42

[1]Percentage of chips which develop blisters greater than 20 mm in diameter during the frying process.

LOCATIONS OF 1986 OHIO POTATO VARIETY TRIALS

1986 Trial Locations

1 - Campbell Institute for Research and Technology, Napolean
2 - Harold Thompson Farm, Hanoverton
3 - Mellinger Farms, Leetonia
4 - Logan Farms, Mt. Gilead
5 - Chase Farms, Defiance
6 - Celeryville Muck Crops Branch, Celeryville
7 - Ohio Agricultural Research and Development Center

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